

Memorandum

Save the trees!
Be energy efficient!

To: MR. MOHAMMAD RAVANIPOUR
Senior Bridge Engineer
Bridge Design Branch 19

Date: February 20, 2004
File: 11-SD-76-KP 19/19.5
Bonsall Creek Bridge (57-0151)
E.A.: 11-257100

Attention: Mike Vasquez and Mina Pezeshpour

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Geotechnical Services, MS#5
Office of Geotechnical Design – South 2

Subject: Revised Foundation Report for Bonsall Creek Bridge Widening

This report is a revised Foundation Report (FR) to supercede the previously submitted one (Feb. 9, 2004), as requested by your Office for a Foundation Report at Bonsall Creek Bridge.

This report presents our understanding of the subsurface soil conditions and general geology information within the vicinity of the proposed bridge widening, which are based on submitted information, our site visual observations, and review of available site geotechnical and geologic information, and subsurface borings. This project structure is located at Bonsall Creek on Route 76 and is to be widened on the western side (up-stream).

Site Description

The Bonsall Creek Bridge is on SR 76 at KP 19.3 (PM 12.06) in northwestern San Diego County and just north of the intersection with Olive Hill Road. The structure is an elbow shaped, twin box culverts, about 6.3 meter in width, with a paved roadway surface directly on top. The topography is generally flat and gently sloping up to the west. Several shops and a gas station are adjacent to the project site. A water line crosses the west edge of the bridge (See photos below). A gas line runs parallel to the highway in front of the market.



Looking east at culvert and water line.



Looking north at upstream (inlet) side.

General Geology and Seismic Information

The site is located within the Peninsular Range Geomorphic Province of California. The project area is in general underlain by young and old alluvial deposits derived from granitic rock. The bedrock is a Cretaceous Tonolite (granite).

Surface soils within the project vicinity consist of dry, silty fine to coarse sand with gravel, cobble and some biotite (mica).

Based on the Caltrans California Seismic Hazard Map of 1996, the nearest known active fault is the Elsinore Fault about 23 km to the northeast. It is capable of producing a Maximum Credible Magnitude (MCE) of 7.5. The Newport-Inglewood/Rose Canyon Fault segment is 25 km away to the southwest and is capable of a MCE of 7.0. The peak bedrock acceleration at the project site is expected to be 0.27g.

Subsurface Investigation

A subsurface investigation was conducted on February 18, 2004. Two borings were augered to a depth of 9.0 m (30 feet). Sample material was visually identified and classified. The predominant material was fine to medium grained sand with subordinate amounts of silt, clay and gravel. Trace of cobble was observed on the surface. The soil was underlain by decomposed granite at a depth of 7.5 m below the surface.

Groundwater was perched and first encountered at elevation 50.1 m, based on the bench mark information located on site. The bottom of the box culvert is about 3.1 m deep (elevation 49.5 m). At boring B2-04, artesian conditions were found at the granite contact, elevation of 45.1 m.

A Log of Test Borings (LOTB) will be provided to the District at a later date.

Foundation Recommendation

With our subsurface soil condition assumptions, we concur with District proposed culvert box design with the following recommendations.

We recommend that the subsurface soil be overexcavated to the depth of 0.3 meter (1.0 foot) below the proposed culvert box bottom, to ensure a relatively uniform subgrade supporting conditions and to minimize the impact of soil condition uncertainties. The exposed overexcavated area should be scarified, moisture conditioned, and compacted as per Caltrans Standard Specifications. We recommend that our representative be notified in advance to inspect the area after the overexcavation to further identify potential loose materials to be removed. The removed soil can then be placed back to the area, moisture conditioned and recompact to 95% relative compaction as per Standard Specifications.

Erosion potential is unknown at this time, however, it should be considered for the structure design and the site overexcavation operation.

Mr. Mohammad Ravanipour
February 20, 2004
Page 3


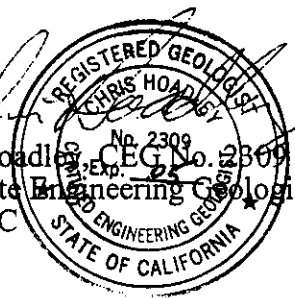
11-SD-76-KP 19.3
11-257100


The soil bearing capacity and potential settlement estimation are analyzed. Based on the expected loading conditions, the District proposed foundation type, available subsurface soil information, and our analyses, we consider the bearing capacity to be adequate for the proposed structure widening. Also, we consider that the settlement potential will be mostly immediate which should be mostly eliminated during the structure construction. The recommendations contained in this report are based on specific project information regarding structure locations and foundation element dimensions that have been provided by your Office. If any conceptual changes, our Office should be notified to re-evaluate the effects the changes may have on the recommendations made in the report.

If you have any questions or comments, please call Chris Hoadley at (916) 227-4515.

Prepared by: Date: 2/20/04

Supervised by: Date: 2-20-04


Chris Hoadley, No. 2309
Associate Engineering Geologist
Branch C



Shawn Wei, P.E., Chief
Branch C
Office of Geotechnical Design – South 2

cc: Aabghari
Project File
Project File - South

Memorandum

*Flex Your Power!
Be energy efficient!*

To: Michael H. Vasquez
District 11
Design Division, MS# 35

Date: January 7, 2003

File: 11-SD-76
KP 19.0/19.5

EA: 11 - 257100

From: **DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design - South 2**

Subject: State Route (SR) 76 Widening: Proposed Retaining Wall.

INTRODUCTION

According to your request of December 6, 2002, the widening of SR 76, due to the site topography would require the construction of a retaining structure in order to retain a planned cut in the existing slope. Following your request, our office conducted a limited geologic assessment of the site where the proposed retaining wall is planned to be located. Our assessment consisted of a site reconnaissance, office review of available geologic literature and pertinent project documentation provided by you, and writing of this memorandum.

EXISTING SITE CONDITIONS

The project site is located in the San Diego County, along the westbound section of the existing SR 76, immediately west of the intersection with the Olive Hill Road, from about Station 202+75 through Station 201+23. It is our understanding that the widening of the roadway along that section of the highway will require further cutting of the existing slope that was cut to the inclination of 1:1.5 vertical to horizontal (V:H) during the construction of the highway. In addition, it is our understanding that depending on the site-specific geology proposed cut could potentially involve the construction of a retaining wall to retain the planned cut.

SITE GEOLOGY

The project site is located within the Peninsular Ranges Geomorphic Province of California. The topography of the area where the project site is located consists of gently rolling hills separated by relatively shallow valleys. In general, the area where the project site is located is underlain by a relatively thin layer of residual soils of the granitic origin that is underlain by the granitic basement (country rock). Subsurface soil conditions of the project site were exposed on the face

of the existing cut. The thin residual mantle of the granitic origin, about 0.6 m thick and comprising granular slightly silty soils, was found to crop out in the upper section of the face of the cut. That mantle was found to be underlain by moderately weathered granitic bedrock. The granitic face of the existing slope was observed to be in a geologically good condition, with infrequent discontinuities (mostly joints and fractures), and no erosional features present.

SEISMICITY

Based on the Caltrans California Seismic Hazard Map of 1996, no known Holocene fault exists within the project area. The nearest known active fault is the south-north trending Whittier-Elsinore Fault which is believed to be capable of producing an earthquake with a Maximum Credible Magnitude of 7.5 on the Richter Scale. It is located about 21 km northeast from the project site. In addition, the Newport-Inglewood-Rose Canyon East Fault which is believed to be capable of producing an earthquake with a Maximum Credible Magnitude of 7.0 on the Richter scale is located about 26 km southwest from the project site. Both faults are believed to be capable of generating a Peak Ground Acceleration of about 0.3 g at the project site (Mualchin 1996).

CONCLUSIONS AND RECOMMENDATIONS

Based on our limited geologic review of the project site, we conclude that we have found no existing geologic factors or conditions that would preclude or adversely affect the implementation of the proposed slope cut. In addition, from the geotechnical engineering standpoint no retaining structure is needed (required) for the planned cut.

We recommend that along the project interval the slope should be cut no steeper than to an inclination of 1:0.75 (V:H). Since there is a possibility that adverse geologic conditions affecting slope integrity may be encountered during the construction phase, an engineering geologist from our office should inspect the exposed cut during construction. In addition, most of the cut could be implemented using conventional excavation methods. However, due to increased rock hardness condition in some sections of the slope an increased excavating effort could be required including blasting.

If you have any questions or comments regarding this memorandum, please call Jeff Tesar at (858) 467-2716 (Calnet 734-2716) or Moussa Jandal at (858) 467-4061.

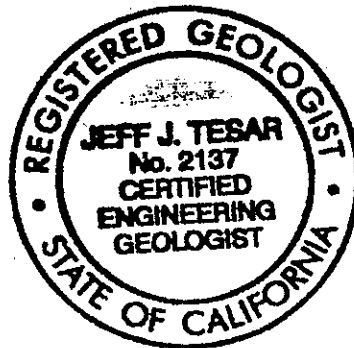
J. Tesar

Jeff Tesar
Associate Engineering Geologist

Geotechnical Branch D

Moussa H. Jandal

Moussa Jandal
Transportation Engineer (Civil)



References:

1. Mualchin, California Seismic Hazard Detail Index Map, 1996.
2. California Divisions of Mines and Geology; Geologic Map of California, Santa Ana S, Rogers, 1965

Attachments

1. Site Location
2. Photos

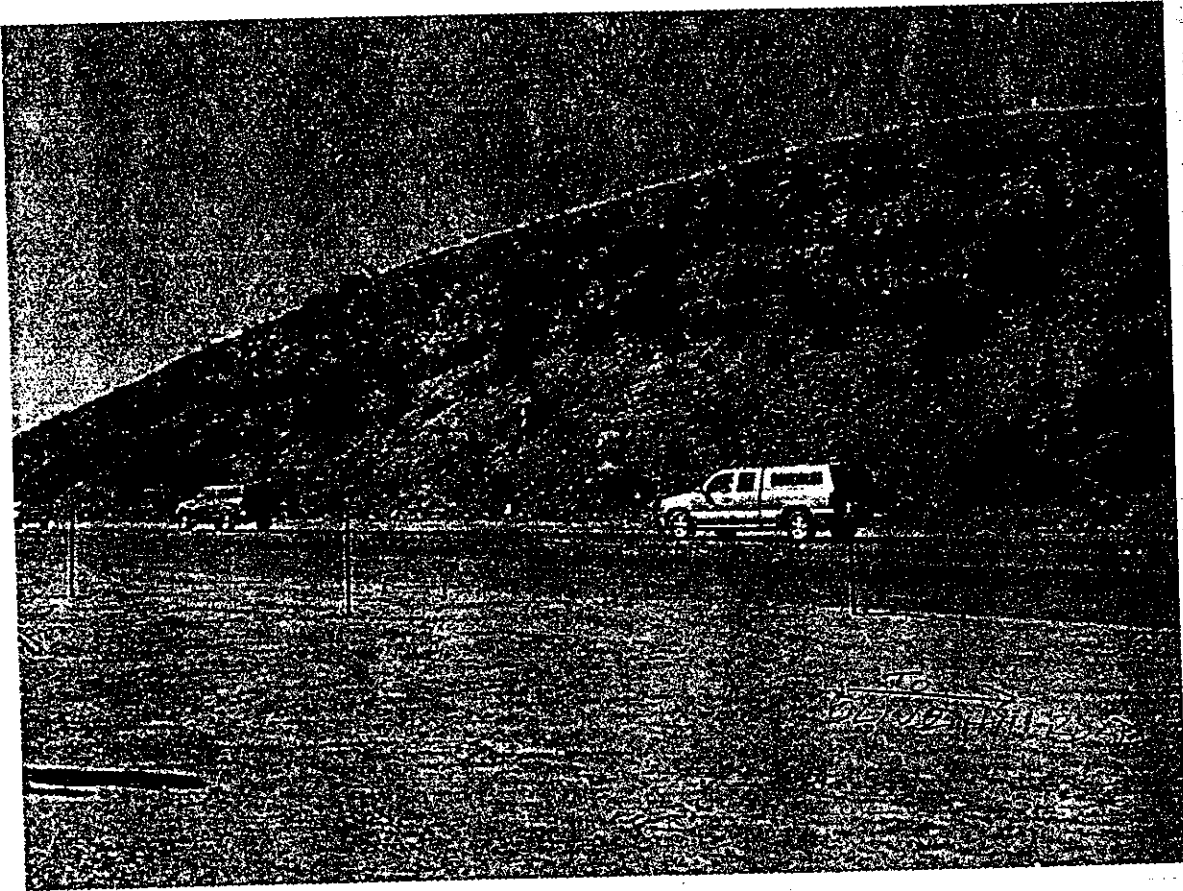
JT

cc:

Abbas Abghari
Zia Yazdani
RGES 01

11-SD-76
EA 257100
SR-76 INTERIM PROJECT
KP 19.0/19.5
(PM 11.8/12.1)

SR-76/OLIVE HILL ROAD



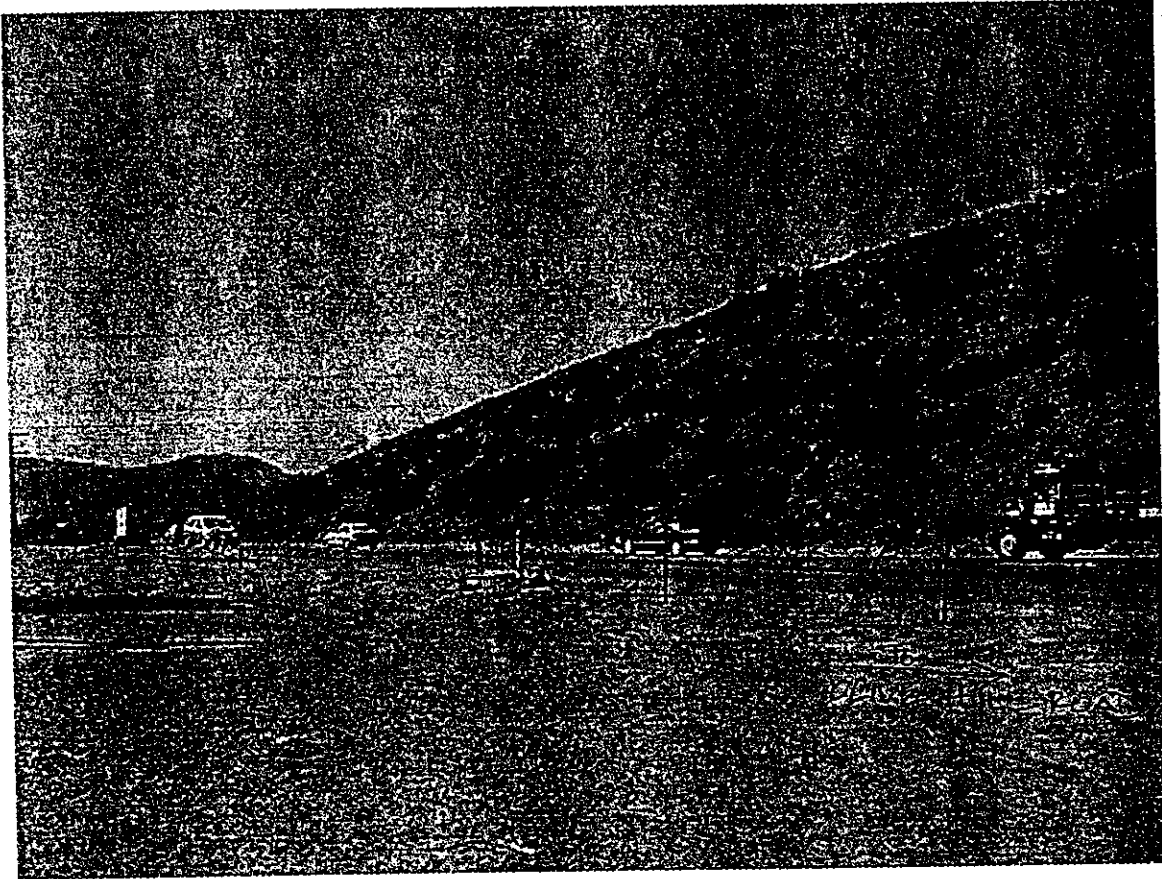
Looking Southwest corner of SR-76/Olive Hill Road at the hill
Note: possible Retaining Wall location.

09/12/02

Image 003S (Disc #2)

11-SD-76
EA 257100
SR-76 INTERIM PROJECT
KP 19.0/19.5
(PM 11.8/12.1)

SR-76/OLIVE HILL ROAD



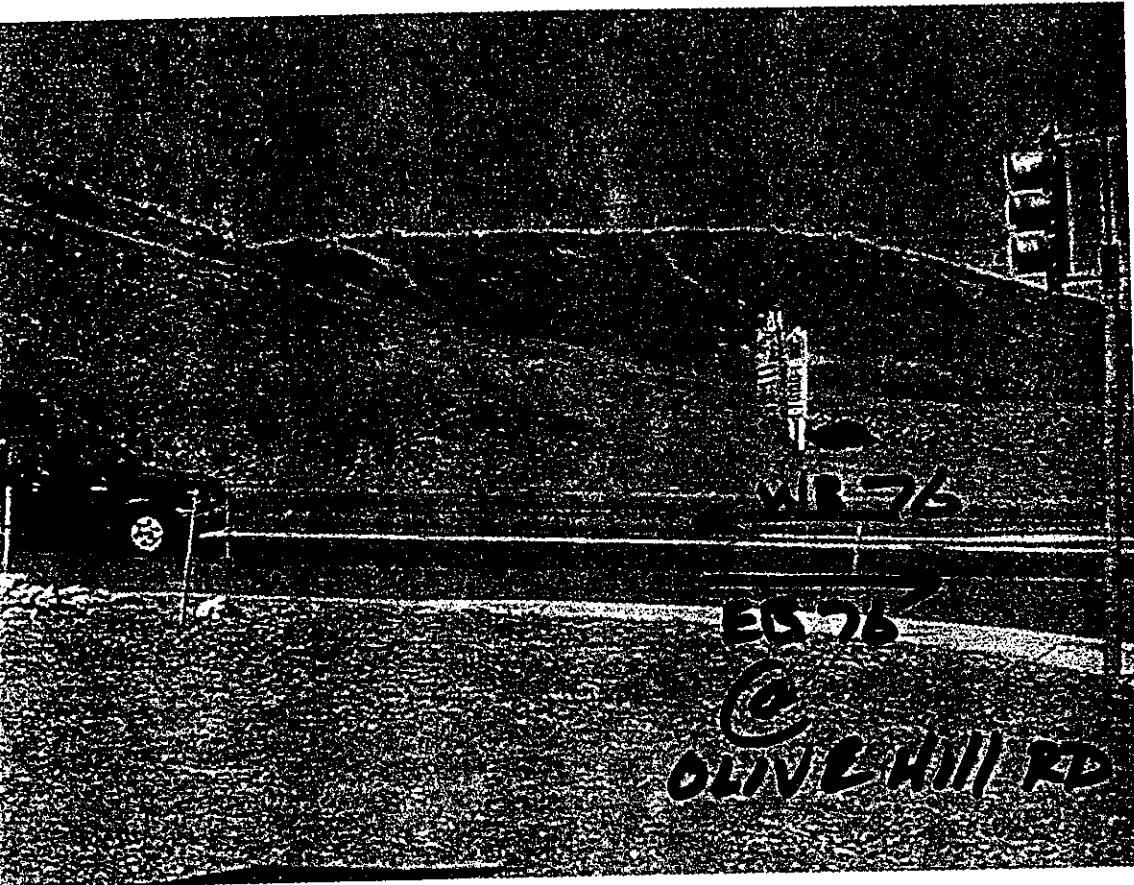
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SR-76/OLIVE HILL ROAD



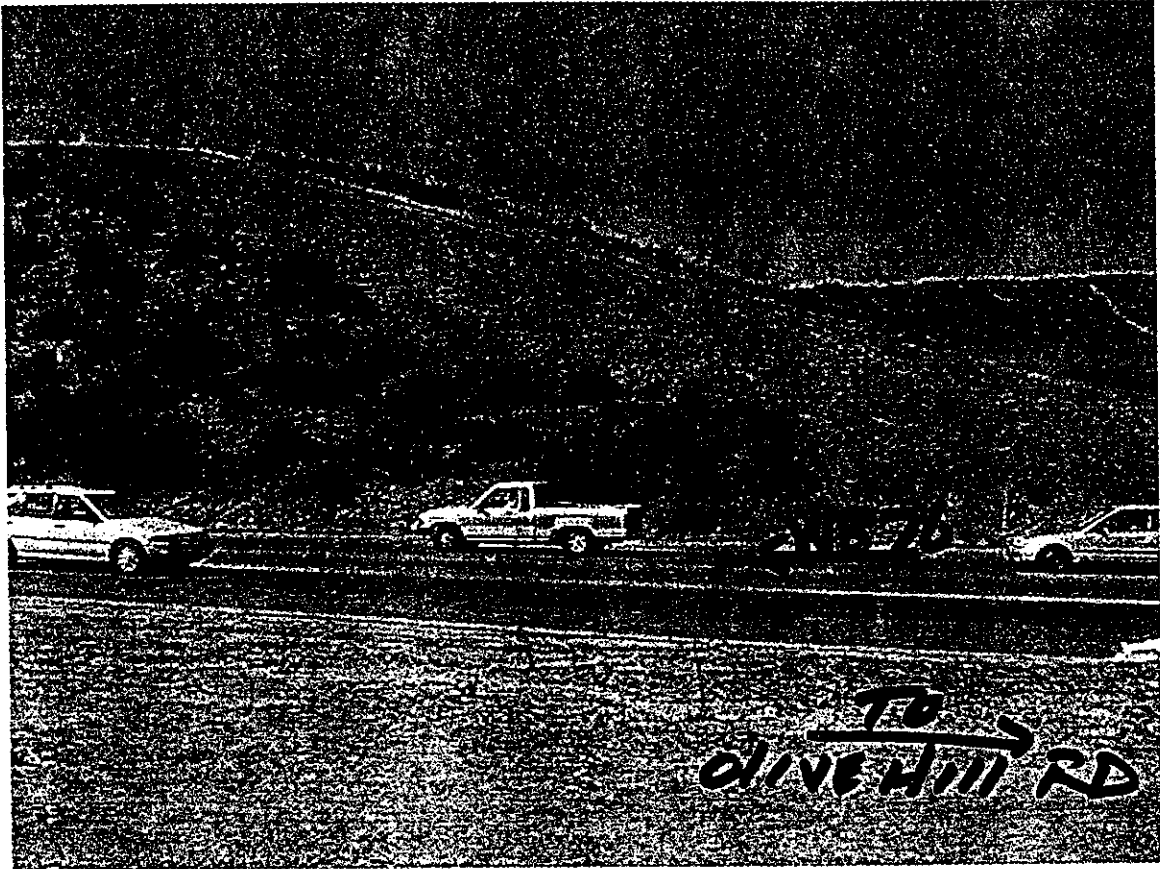
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SR-76 INTERIM PROJECT
KP 19.0/19.5
(PM 11.8/12.1)

SR-76/OLIVE HILL ROAD



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Note: possible Retaining Wall location.

09/12/02

Image 002S (Disc #2)

Memorandum

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To: MR. MOHAMMAD RAVANIPOUR
Senior Bridge Engineer
Bridge Design Branch 19

Attention: Mike Vasquez and Mina Pezeshpour

Date: February 20, 2004
File: 11-SD-76-KP 19/19.5
Bonsall Creek Bridge (57-0151)
E.A.: 11-257100

From: DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Geotechnical Services, MS#5
Office of Geotechnical Design – South 2

Subject: Revised Foundation Report for Bonsall Creek Bridge Widening

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Mr. Mohammad Ravanipour
February 20, 2004
Page 3


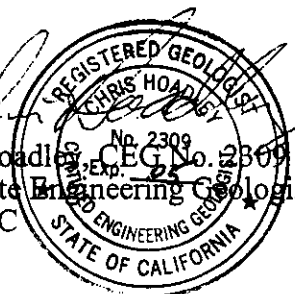
11-SD-76-KP 19.3
11-257100


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Prepared by: Date: 2/20/04

Supervised by: Date: 2-20-04


Chris Hoadley, No. 2309
Associate Engineering Geologist
Branch C



Shawn Wei, P.E., Chief
Branch C
Office of Geotechnical Design – South 2

cc: Aabghari
Project File
Project File - South

Memorandum

*Flex Your Power!
Be energy efficient!*

To: Michael H. Vasquez
District 11
Design Division, MS# 35

Date: January 7, 2003

File: 11-SD-76
KP 19.0/19.5

EA: 11 - 257100

From: **DEPARTMENT OF TRANSPORTATION
DIVISION OF ENGINEERING SERVICES
Geotechnical Services
Office of Geotechnical Design - South 2**

Subject: State Route (SR) 76 Widening: Proposed Retaining Wall.

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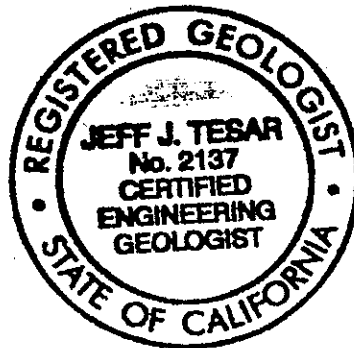
J. Tesar

Jeff Tesar
Associate Engineering Geologist

Geotechnical Branch D

Moussa H. Jandal

Moussa Jandal
Transportation Engineer (Civil)



References:

1. Mualchin, California Seismic Hazard Detail Index Map, 1996.
2. California Divisions of Mines and Geology; Geologic Map of California, Santa Ana S, Rogers, 1965

Attachments

1. Site Location
2. Photos

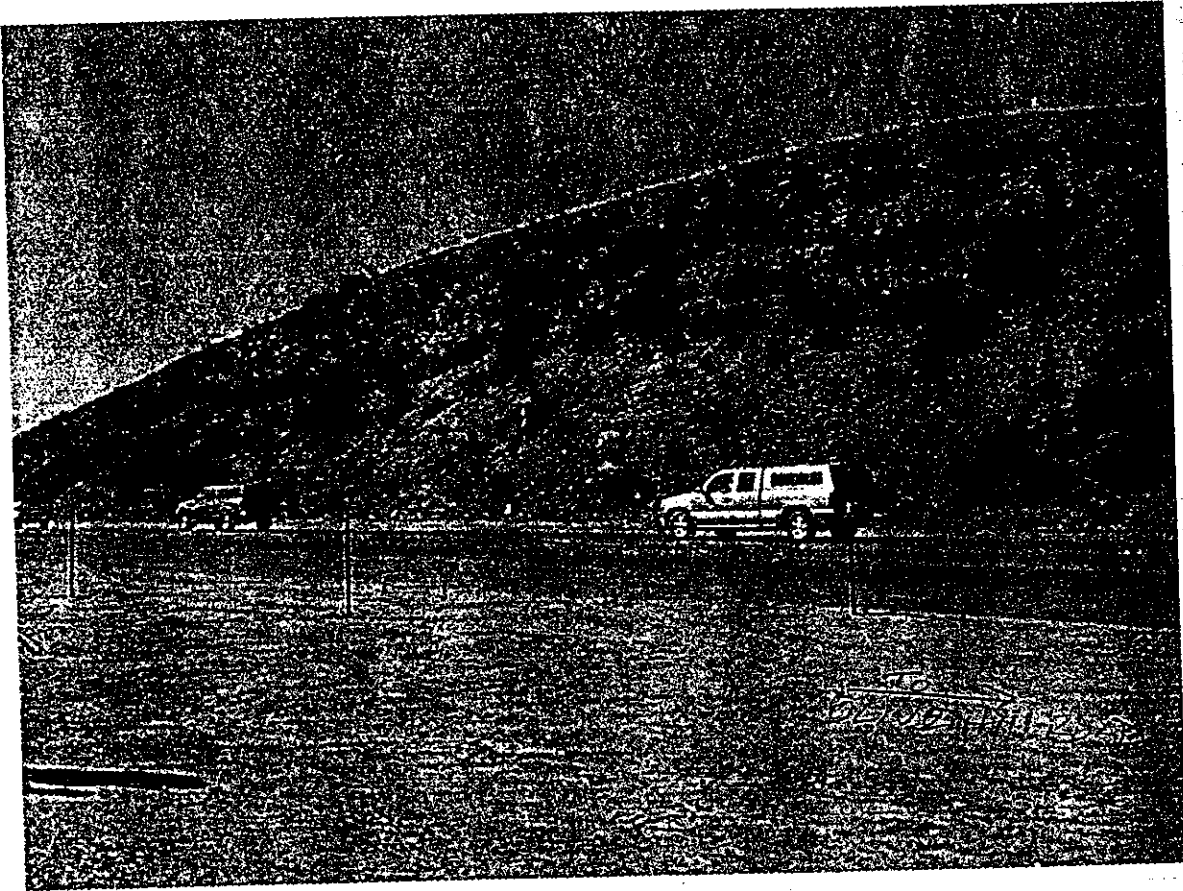
JT

cc:

Abbas Abghari
Zia Yazdani
RGES 01

11-SD-76
EA 257100
SR-76 INTERIM PROJECT
KP 19.0/19.5
(PM 11.8/12.1)

SR-76/OLIVE HILL ROAD



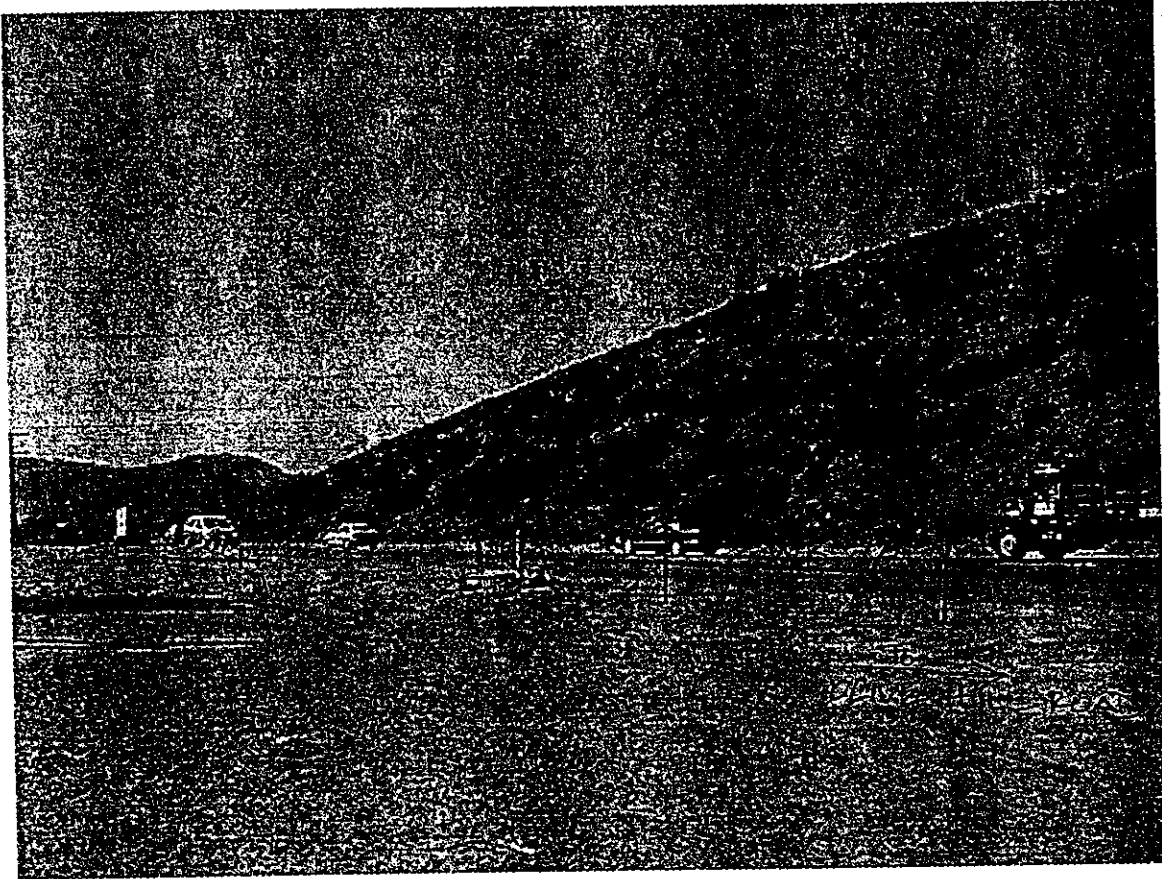
Looking Southwest corner of SR-76/Olive Hill Road at the hill
Note: possible Retaining Wall location.

09/12/02

Image 003S (Disc #2)

11-SD-76
EA 257100
SR-76 INTERIM PROJECT
KP 19.0/19.5
(PM 11.8/12.1)

SR-76/OLIVE HILL ROAD



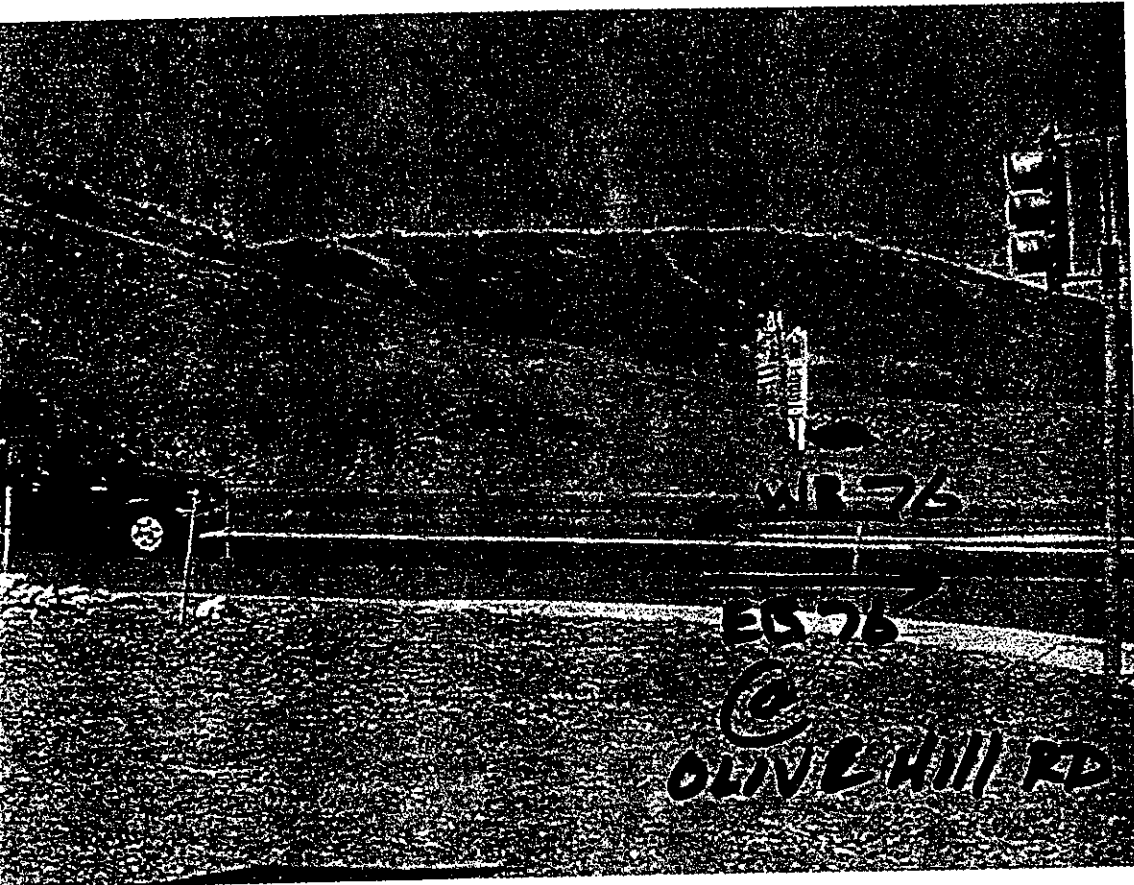
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SR-76/OLIVE HILL ROAD



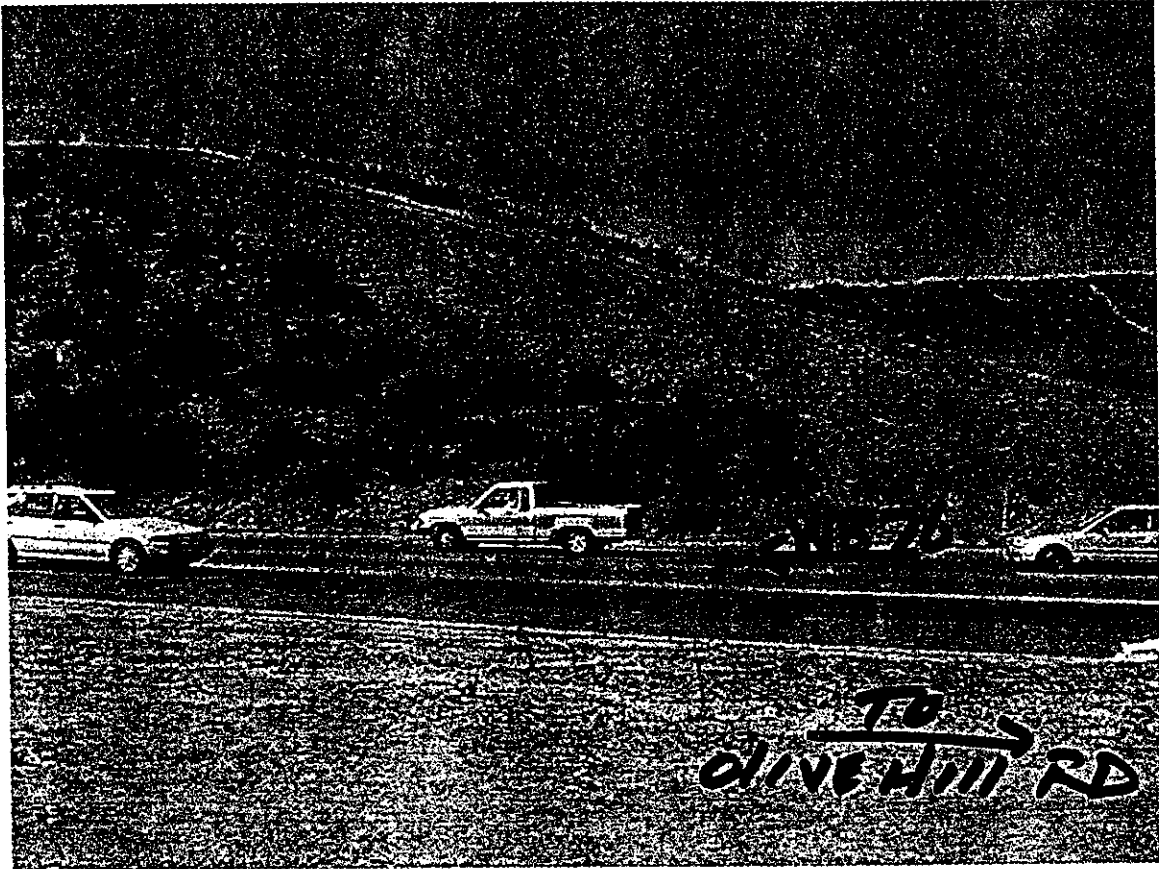
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KP 19.0/19.5
(PM 11.8/12.1)

SR-76/OLIVE HILL ROAD



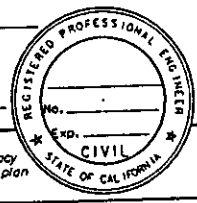
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09/12/02

Image 002S (Disc #2)

DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO	TOTAL SHEETS
11	SD	76	R19.0/19.5		

REGISTERED CIVIL ENGINEER



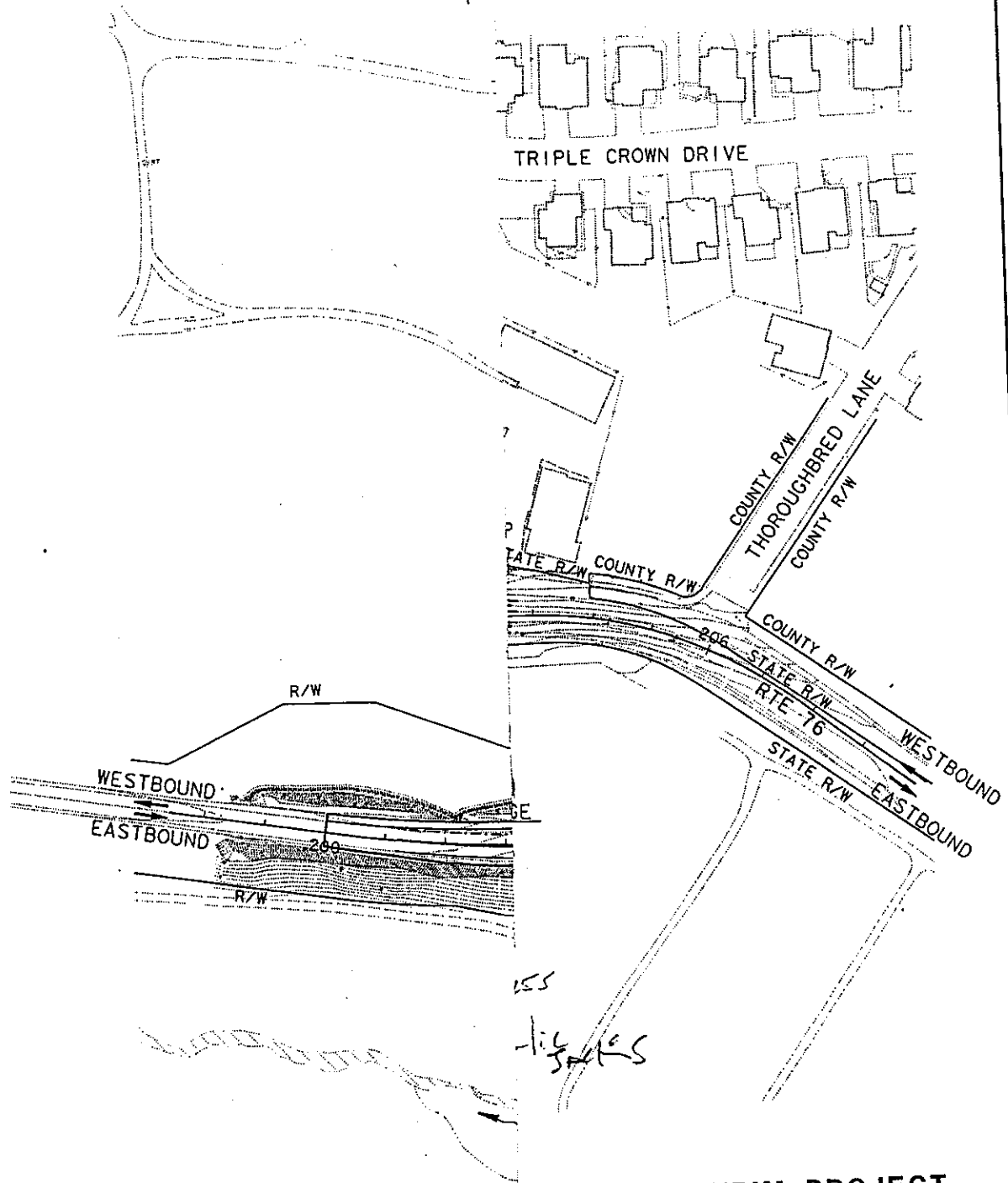
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

Cal-Trans now has a web site! To get to the web site, go to: <http://trsc.dot.ca.gov>

ric

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	PROJECT ENGINEER	CALCULATED/DESIGNED BY	REVISOR
Caltrans PROJECT DEVELOPMENT	M.H. VASQUEZ	CHECKED BY	DATE
			REVISOR
			DATE
			REVISOR
			DATE



**SR-76 INTERIM PROJECT
SITE MAP**

**INCOMPLETE PLANS SR-76 AT OLIVE HILL ROAD
FOR DESIGN STUDY ONLY**

DATE PLOTTED 12-02-02
DATE PLOTTED 12-02-02
TIME PLOTTED 09:32

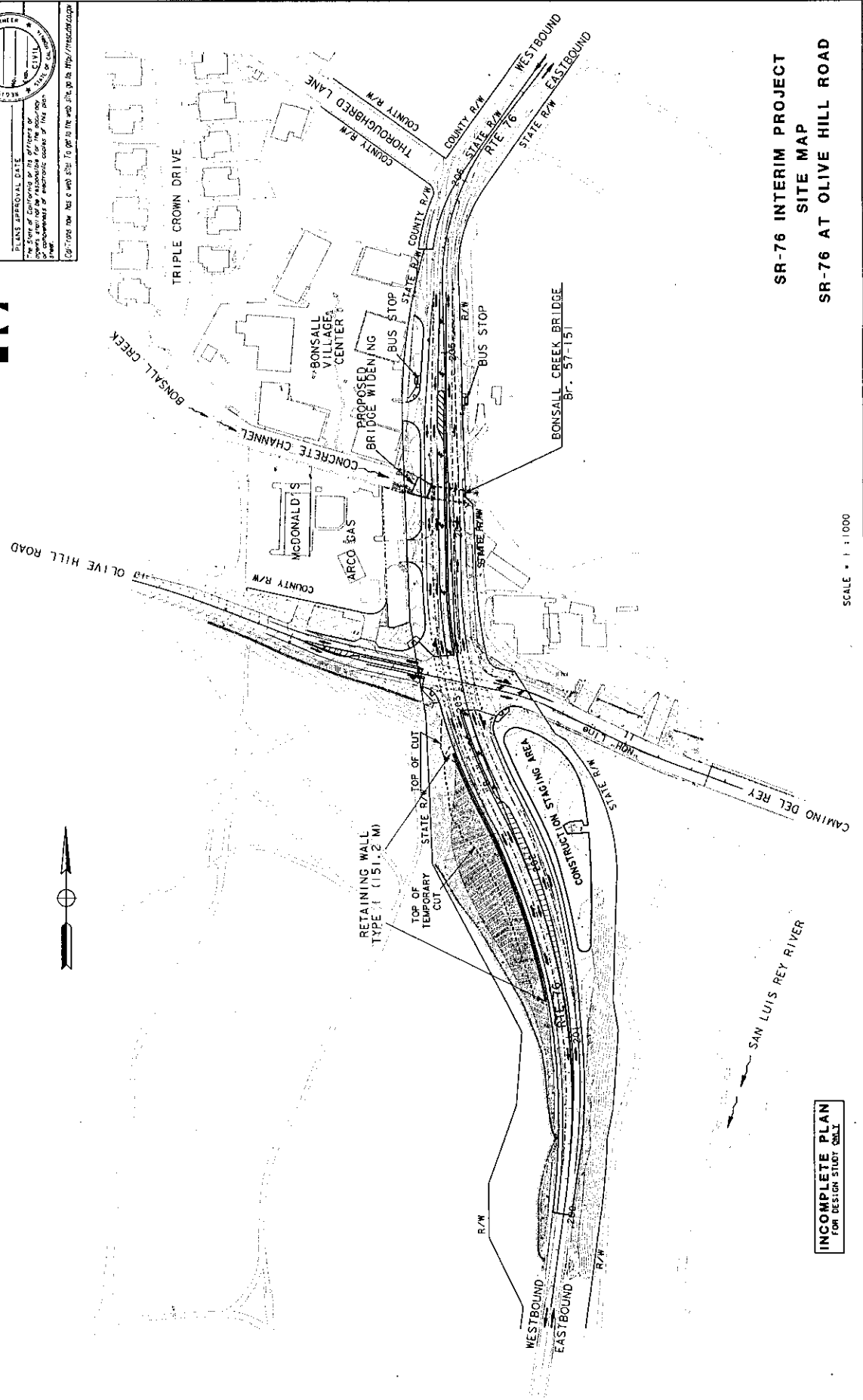
CU 11223 EA 000000

**SR-76 INTERIM PROJECT
 SITE MAP
 SR-76 AT OLIVE HILL ROAD**

SCALE = 1:1000

FOR REDUCED PLANS ORIGINAL
 SCALE IS IN MILLIMETERS
 USERNAME: 11-06-02-2002
 DON: LINE 11-06-02-2002

CU 11223
 EA 000000



DIST	COUNTY	ROUTE	TOTAL PROJECT	SHEET
11	SD	76	R19, D/19.5	1

REGISTERED CIVIL ENGINEER

PLANS PERSONAL DATE

The State of California or the officers or agents thereof are not responsible for the accuracy or completeness of electronic copies of this plan.

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION		PROJECT ENGINEER		M. H. VASQUEZ		CHECKED BY		DATE	
DATE		DESIGNED BY		DATE		REVISOR		DATE	
DATE		REVISOR		DATE		REVISOR		DATE	

**INCOMPLETE PLAN
 FOR DESIGN STUDY ONLY**